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REMARKS

This communication is in response to the Office Action mailed on March 10, 2005. In the Office Action, claims 1-44 were pending.

The Office Action reports that claims 1-44 were rejected under obvious-type double patenting. Specifically, the Office Action states that claims 1-44 were unpatentable over the claims 1-33 of co-pending application no. 09/823,580 in view of U.S. Patent No. 6,018,736 to Gilai et al. It is observed that both the present application and co-pending application no. 09/823,580 are commonly owned and have the same filing date of March 31, 2001. Therefore, it is respectfully submitted that a terminal disclaimer is not necessary because the present application would not extend the right to exclude as referred to in the Office Action. Thus, it is respectfully requested that the double patenting rejection be redrawn.

The Office Action next reports that claims 1-7, 14, 34-36, and 41-43 were rejected under 35 U.S.C. §102 (b) as being unpatentable over U.S. Patent No. 5,828,991 to Skeina et al. (hereinafter Skeina).

Claim 1 has been amended to recite a method for determining a word entered using a reduced keypad, where each of one or more keys of the reduced keypad is mapped to a plurality of letters, the method comprising receiving key input corresponding to the entered word and at least one of a left context and a right context, determining a list of possible words corresponding to the key input for the entered word, wherein each listed word is in a vocabulary or a cache, and using a language model to rank the listed words based on one or more of the at least one of the left context and the right context of the key input, wherein the language model is trained using words entered into the cache. [emphasis added]

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The amendments to claim 1 at least clarify that the language model is trained using words entered by a user into the cache. Support for the amendments to claim 1 is believed found at least at page 15, lines 18-21 of the Specification. Thus, it is believed that the amendments to claim 1 add no new matter.

Skiena discloses a system and method of reconstructing sentences entered using a reduced keyboard such as a telephone keypad using word ambiguity resolution. It is believed that Skiena does not teach, show, or suggest all of the features of claim 1. For example, it is believed that Skiena does not include a language model that is trained using words entered into a cache as recited in claim 1. Instead, it is believed that Skiena's word and word pair frequencies are determined for the entire language using a fixed corpus. (abstract) Thus, it is believed that the language model would not be continuously improved using words entered in the cache. For example, Skiena disclose the "Brown" corpus as one possible corpus. (Col. 6, lines 46-49)

In contrast, in the present inventions the language model is initially trained based on a larger corpus. However, the language model can be improved or updated based on words entered into the cache. It is believed that using words in the cache to improve the language model is advantageous due to, for example, a particular user's propensity to enter certain words more frequently than typical for a particular language. Such a propensity can be included in the language model for greater accuracy, for example, for the particular user.

It is also believed that the Skiena system and method requires that the entire sentence <u>be entered first</u> with symbols placed between words in order segment individual words. (See FIGS. 3 and 7) A word trellis or lattice is apparently constructed with possible words or tokens corresponding to each entered word. (abstract) Paths through the lattice represent possible sentence reconstructions. (abstract) A Viterbi algorithm

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is used to decode or select paths based on probability. (Col. 9, lines 9-11) Importantly, it is believed that Skiena discloses that implausible sentences can be rejected by augmenting each possible word with a tag representing a grammatical word category. (FIG. 8, Col. 9, line 64 to Col. 10, line 2) It is believed that bigram frequencies for these grammatical <u>tags</u> are used to calculate transitional probabilities. These transitional probabilities are considered by the Viterbi algorithm to in determining probable paths through the lattice. (Col. 10, lines 12-19)

With respect to claims 6 and 7, it is noted that the Office Action refers to an n-gram language model at Col. 10, lines 12-14. Claim 6 has been amended to clarify that claim 6 recites a word n-gram language model. A discussed above, it is believed that this reference to Col. 10, lines 12-14 refers to probabilities of finding sequences of <u>grammatical categories</u> such as a subject/verb pair rather than actual word sequences such as "He runs" across the language corpus. (See FIG. 8) Indeed, Skiena discloses that the tags are used to ensure that implausible sentences are rejected (Col. 9, line 67) not to select probable word pairs. For example, a verb/verb sequences might be rejected as implausible since verbs do not normally occur adjacent one another in sentences.

In light of the forgoing, it is respectfully submitted that claim 1 is patentable over the cited art. Claims 2-20 depend on claim 1 and are believed to be separately patentable. Reconsideration and allowance of claims 1-20 are respectfully requested.

The Office Action further rejected claim 34 on the same basis as claim 1 due to similarity of the claimed subject matter. Claim 34 has been amended in a manner similar to claim 1. Remarks relating to claim 1 are incorporated herein. Thus, it is believed that claim 34 is patentable over Skeina for at least the reasons

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discussed with respect to claim 1. Claims 35-44 depend on claim 34 and are believed to be separately patentable. Reconsideration and allowance of claims 34-44 are respectfully requested.

The Office Action next reports that claims 8 and 44 were rejected as unpatentable over Skeina in view of U.S. Patent No. 5,953,541 to King et al. (hereinafter King) As noted above, amendments have been made to claims 1 and 34 on which claims 8 and 44 respectively depend. Also, claims 1 and 34 have been amended to additionally recite a language model trained using words entered into the cache. The Office Action refers to Col. 10, lines 17-33 of King as disclosing this feature. It is believed that the section in King describes the situation, for example, where the keystroke input is "ABC DEF GHI" and possible words corresponding to this sequence include "age", "aid", and "big". King apparently describes that the word "age" would be listed first in a list of possible words if "age" had been entered more frequently than the other words.

However, it is believed that King does not teach, show, or suggest the feature of using a language model to rank a list of possible words corresponding to the key input based on one or more of the left and right context, and training the language model using words entered into the cache as recited in claim 1. Thus, it is claims 1 (and 34) are patentable over King. Claims 8 and 44 depend on claims 1 and 34, respectively, and are thus believed to be separately patentable. Reconsideration and allowance of claims 8 and 44 are respectfully requested.

The Office Action reports that claims 9, 15-17, 27-30, and 33 were rejected under 35 U.S.C. §103 as being unpatentable over Skeina in view of U.S. Patent No. 6,415,48 to Bangalore et al. (hereinafter Bangalore) As discussed above, amendments have been made to claim 1 on which claims 9 and 15-17 depend. Thus, it is believed that these amendments to claim 1 moot the above rejection. Independent claim 27 has been further amended in a

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manner similar to claim 1 so that words entered into the cache are considered by the language model. Thus, it is believed that claim 27 is patentable over the cited art. Claims 28-33 depend on claim 27 and are believed to be separately patentable. Reconsideration and allowance of claims 27-33 are respectfully requested.

The Office Action next report that claims 10, 12, and 21-26 were rejected as unpatentable over the combination of Skeina and U.S. Patent No. 6,018,736 to Gilai et al. (hereinafter Gilai). It is believed that claims 10 and 12, which depend on claim 1 have been addressed with respect to claim 1. Claim 21 has been amended in a manner similar to claim 1 in that words entered in the cache are considered in the language model. However, claim 21 recites features including, for each possible word corresponding to the key input, determining an <u>n-gram probability of the word given the left context, wherein the n-gram probabilities are stored in a language model trained at least in part on words entered into a cache</u>. [emphasis add] Remarks relating to claim 1 are herein incorporated by reference. Thus, it is respectfully submitted that claim 21 is patentable over the cited art. Claims 22-26 depend on claim 1 and are believed to be separately patentable. Reconsideration and allowance of claims 21-26 are respectfully requested.

It is noted that claims 11, 13, 18-19, and 31-32 were rejected as unpatentable over a combination of three references. In particular, claims 11 and 13 were rejected based on the combination of Skiena, Gilai, and King. Claims 18, 19, 31, and 32 were rejected based on the combination of Skiena, Bangalore, and King.

It is believed that claims 11, 13, 18-19, and 31-32 are patentable over the cited art because the cited combinations do not teach or suggest all the features of these claims. It is noted that three criteria must be met to establish a *prima facie*

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case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success. Finally, the prior art reference, or combination of references, must teach or suggest all the claim limitations. MPEP §2142. Applicants respectfully traverse rejections based on three references absent evidence that the cited combination meets the above three criteria. Generally, it is believed that rejections based on three or more references under 35 U.S.C. §103 are especially tenuous.

. Thus, applicants respectfully request withdrawal of rejections based on three or more references absent the required suggestion to combine as well as the required showing of probability of success. It is believed that the prior art fails to disclose all the claim limitations and there would be no motivation to combine the references as proposed by the Examiner.

A petition for a three-month extension of time is hereby requested. A charge authorization is included herewith for the extension fee.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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